



Interim results for the period ended 30 June 2018

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Arix Bioscience is a global life sciences venture capital company

Enabling public equity investors to realise superior long term returns  
through diversified investments and company creation in game  
changing life science technologies

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- Portfolio Update
- Company Strategy
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# Interim Update

# Interim results

30 June 2018 highlights

## Financial highlights

- £35.6m net positive revaluation of core portfolio\*
- Successful £87m fundraise by the Company from new and existing investors
- Gross portfolio value increased by 71% to £121.8m
- £14.4m of investments made into existing portfolio in the period and a further £4.2m in July 2018
- Net Asset Value of £257.6m; an increase of 76%
- £29.3m profit before tax in the six month period to 30 June 2018

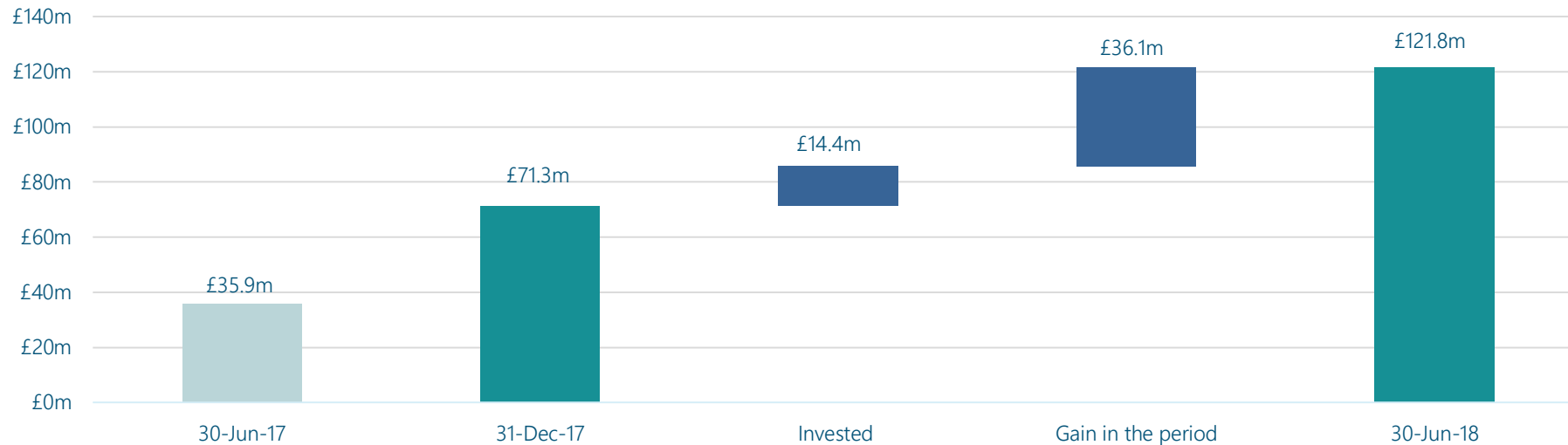
## Operational highlights

- Strategic agreements signed by the Company with new investors Fosun International and Ipsen
- Positive clinical development within the Group; 15 clinical trials across the portfolio
- New strategic agreement signed with Fred Hutchinson Cancer Research Center and Evotec AG; further expanding extensive deal sourcing capabilities
- Seed investing activity commenced alongside academic partner

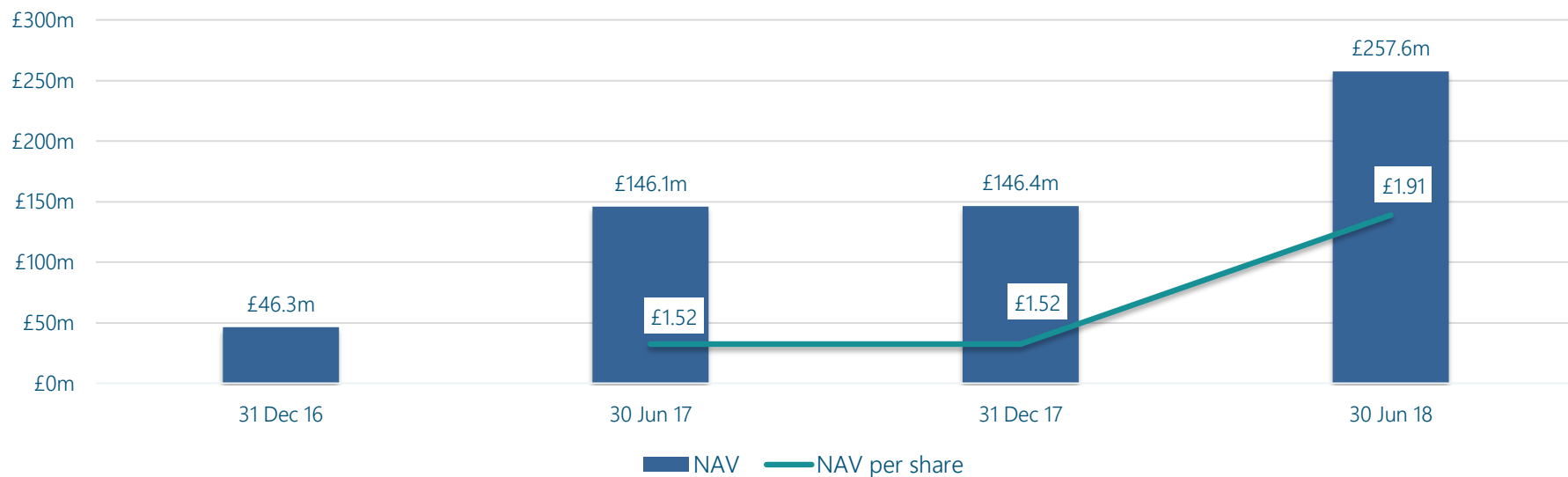
# Performance overview

Strong delivery in HY2018

## Gross portfolio value



## NAV progression



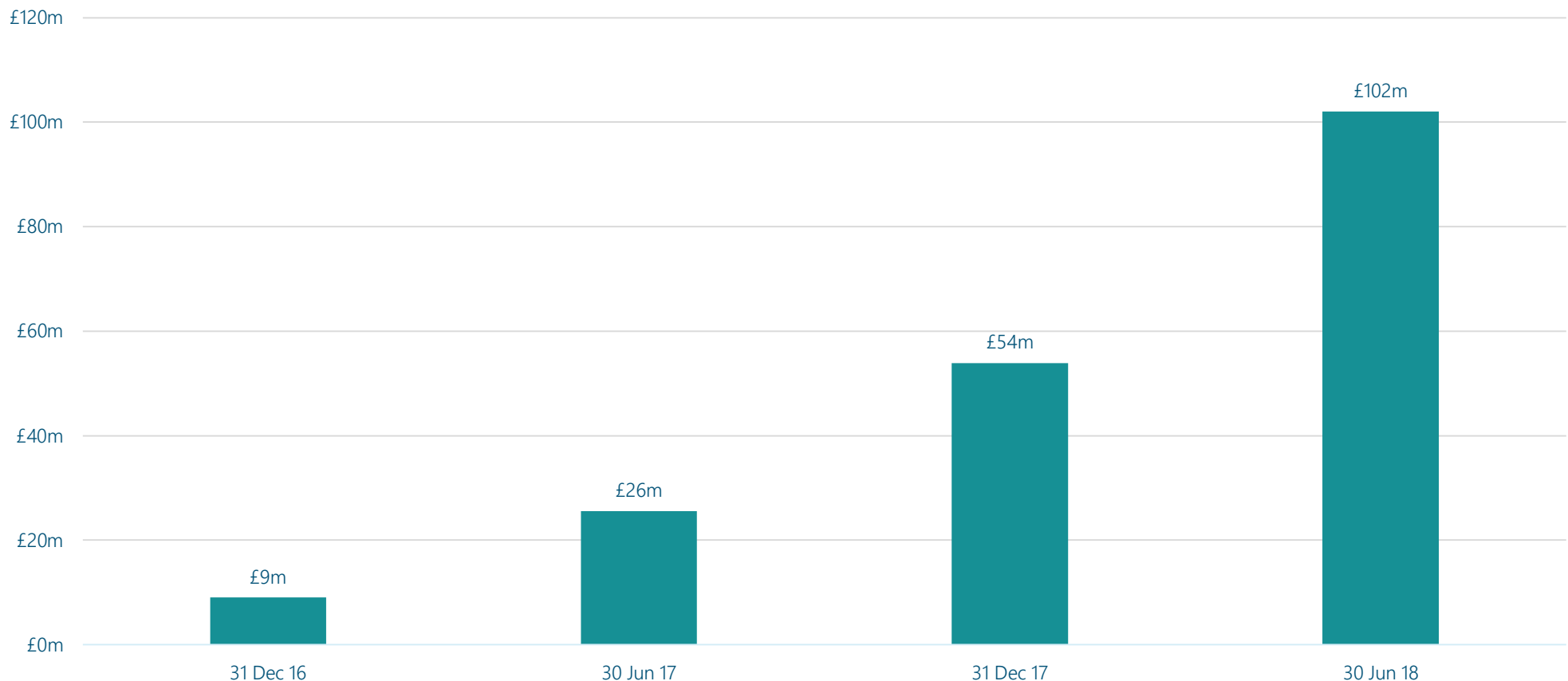
# Core portfolio

Fast pace of growth in core portfolio driving value

13 Group Businesses with a total value of £102m; representing 84% of Gross Portfolio Value

Building stakes as milestones are met to accelerate growth

Select new holdings added each year in line with strategy





# Significant progress since formation

Rapid pace of growth with key milestones met in first two years

December 2016	December 2017	June 2018
NAV £46m	NAV £146m	NAV £258m
Gross Portfolio value of £17m	Gross Portfolio value £71m	Gross portfolio value £122m
2 clinical trials	12 clinical trials	15 clinical trials
Core portfolio of 5 companies	Core portfolio of 13 companies	Core portfolio of 13 companies plus seed investment

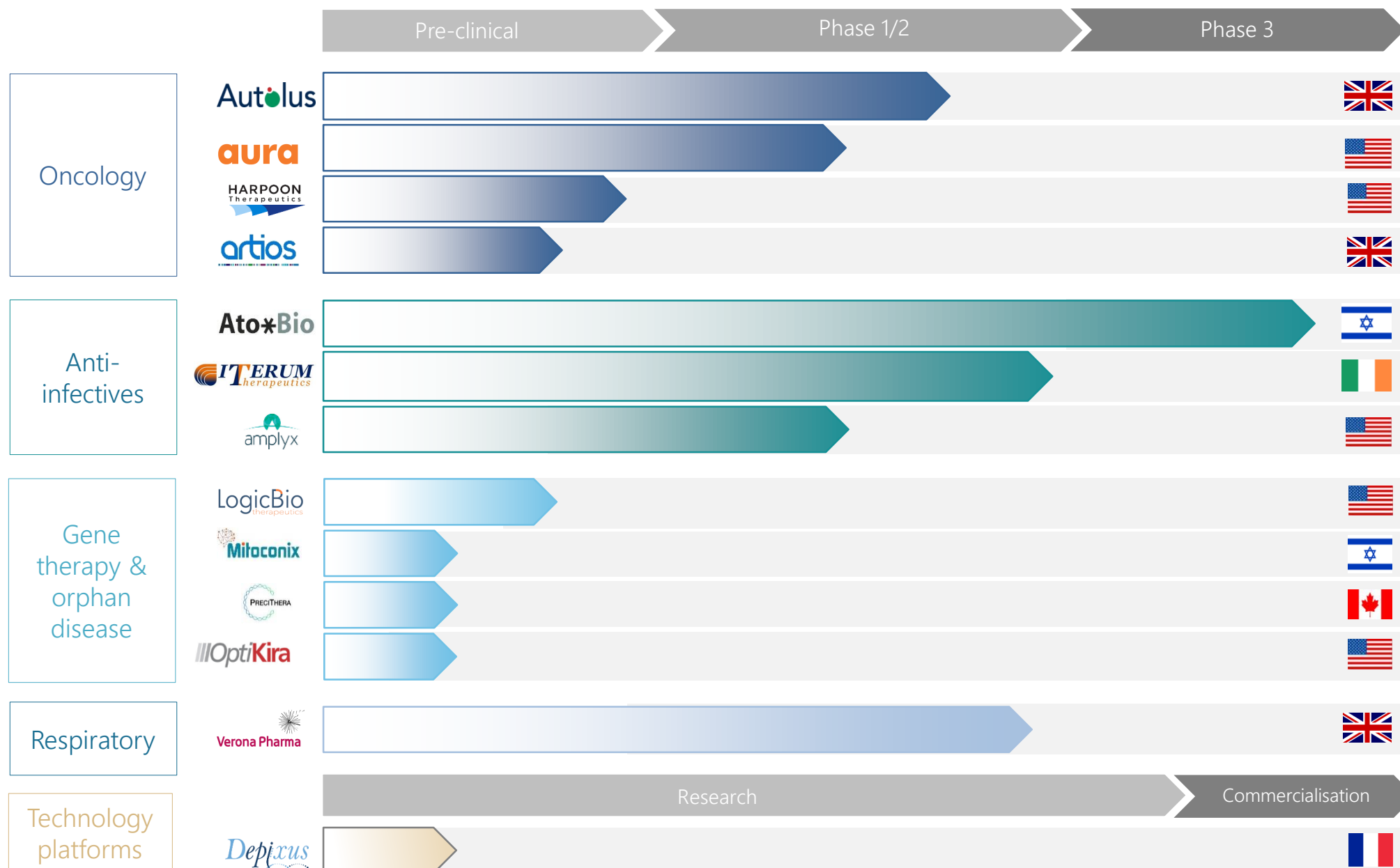


£250m  
raised to date

# Portfolio Update

# Diverse and innovative portfolio

Invested in cutting edge life science companies across all stages of development



# Extensive pipeline

Multiple expected catalysts; 15 clinical trials across the portfolio

Company	Indication	Research	Pre clinical development	Phase 1/2	Phase 3
Atox Bio	NSTI				
Iterum	Complicated intra-abdominal infections				
Iterum	Uncomplicated UTI				
Iterum	Complicated UTI				
Verona	COPD				
Verona	Cystic Fibrosis				
Atox Bio	AKI				
Autolus	AUTO2 Multiple Myeloma				
Autolus	AUTO3 DLBCL				
Autolus	AUTO3 pALL				
Autolus	AUTO1 pALL				
Autolus (academic partner)	AUTO6 Neuroblastoma				
Aura	Ocular melanoma				
Amplyx	Invasive fungal infections				
Autolus (academic partner)	AUTO1 aALL				
Autolus (academic partner)	AUTO4 T cell lymphoma				
Harpoon	HPN424 Prostate Cancer				
Harpoon	HPN536 Mesothelin				
LogicBio	MMA				
Artios	Pol Theta (Polθ)				
PreciThera	Orphan bone				
Mitoconix	Huntington's Disease				
Mitoconix	Parkinson's Disease				
Optikira	Retinitis Pigmentosa				

Multiple undisclosed pre clinical programmes

# Oncology portfolio

Active investment strategy driving long term value creation

## Autolus

*Developing next-generation, programmed T cell therapies for the treatment of cancer*

- Oversubscribed \$150m IPO; 3 x return on investment to date
- Arix led £40m Series B enabling company to initiate first clinical trials and played a pivotal role in key new hires at the company
- Arix first invested when Autolus was valued at \$75m, market cap today of ~\$1bn
- 6 clinical trials initiated in 5 programmes, with further preclinical studies ongoing

Cash invested: £20.8m

Current NAV: £64.2m

## artios

*Next generation DNA Damage Response (DDR)*

- Ex Kudos team; proven DDR team that discovered Lynparza
- Arix played a key role in the expansion of management team, including Pierre Legault as Chairman and Graeme Smith as CSO
- Currently raising a Series B investment round to fund the development of first-in-class DDR targeted cancer therapies through to the clinic.

Cash invested: £3.7m

NAV at cost: £3.7m

## aura

*Novel, selective treatment for ocular melanoma*

- Arix co-led \$30m Series C
- Positive progression in Phase 1b/2; interim data shows signs of tumour regression
- Strong safety and efficacy data
- Granted Orphan Drug and Fast Track Designation by FDA

Cash invested: £2.5m

NAV at cost: £2.5m

## HARPOON Therapeutics

*Antibody-derived T-Cell Engaging Platform targeting solid tumours*

- Arix co-led \$45m Series B
- Signed a research collaboration with Abbvie in 2017
- Expansion of management team
- Positive pre clinical data
- HPN424 Phase 1 Prostate Cancer trial due to start in 2H2018
- HPN536 Mesothelin trial due to start 1H2019

Cash invested: £8.4m\*

Current NAV: £9.4m

\* £4.2m at 30 June 2018 plus £4.2m invested in July 2018

# Anti-infectives portfolio

Active investment strategy driving long term value creation

## AtoxBio

*Novel immunomodulators for acute, life threatening, conditions resulting from severe acute inflammation caused by severe infections*

- Arix led \$30m Series F financing
- Continued momentum with lead product, Reltecimod in Phase 3 NSTI trial
- Positive Phase 2 NSTI data across multiple endpoints
- Commenced Phase 2 AKI trial
- Data from NSTI and AKI trials expected 2H2019
- FDA and EMA granted Reltecimod Orphan Drug status and Fast Track designation

Cash invested: £3.0m

Current NAV: £3.1m

## ITERUM therapeutics

*Developing novel anti-infectives aimed at combatting the global crisis of multi-drug resistant pathogens*

- Arix led \$65m Series B financing
- \$87m IPO in May 2018 to fund three Phase 3 trials
- Phase 3 data from all three indications expected 2H2019
- Aiming to file NDA in 2H2019
- Differentiated lead product with significant revenue opportunity
- Strong IP & regulatory protection

Cash invested: £12.7m

Current NAV: £8.3m



*Novel small molecule therapy, APX001, for life threatening fungal infections*

- Data from two Phase 1 studies of APX001 and five non-clinical trials show tolerability, safety and non-clinical efficacy
- FDA has granted orphan drug designation to APX001
- Phase 2 trial in invasive fungal infections starting in 2H2018
- Phase 2 data expected in 2019

Cash invested: £2.8m

NAV at cost: £2.8m

# Gene therapy & orphan disease portfolio

Active investment strategy driving long term value creation

## LogicBio therapeutics

*Gene therapy & editing for early-onset rare diseases*

- Arix led a \$45m Series B
- Expansion of management team, including CFO, CBO, CSO, and COO
- Phase 1/2 gene therapy trial due to commence in 2019

Cash invested: £5.1m

Current NAV: £4.9m

## Mitocnix

*Developing disease-modifying therapeutics for neurodegenerative diseases*

- Indications in Huntington's Disease (primary), Parkinson's Disease (Secondary)
- Ph.1 Huntington's trial start due to commence in 2019

Cash invested: £0.4m

NAV at cost: £0.4m



*Precision medicine for orphan bone diseases*

- Arix co-led \$29M Series A financing
- Targeting multiple orphan bone diseases that cannot be treated via traditional protein replacement therapies
- Ph.1/2 orphan bone trial due to commence in 2019

Cash invested: £0.5m

NAV at cost: £0.5m

## OptiKira

*Developing drugs that inhibit the unfolded protein response (UPR)*

- Demonstrated the efficacy of molecules in a retinitis pigmentosa rat model
- Proof of concept also demonstrated in mouse models of diabetes; with ongoing proof of concept studies underway for ALS and IPF
- Clinical candidate selection in 2H2018

Cash invested: £1.3m

NAV at cost: £1.3m

# Respiratory & technology platforms

Active investment strategy driving long term value creation



*Clinical stage company focused on the development and commercialization of innovative prescription medicines to treat respiratory diseases with significant unmet medical needs*

- Successfully listed on NASDAQ and raised \$80m
- Positive Phase 2 clinical data
- Significant market opportunity – significant unmet medical need and large patient population
- Clear pathway to approval – robust clinical data
- Strong potential for adoption and significant outlook for growth
- Phase 3 COPD study due to commence in 2019

Cash invested: £3.6m

Current NAV: £3.7m



*Completely novel approach for epigenomic sequencing & analysis*

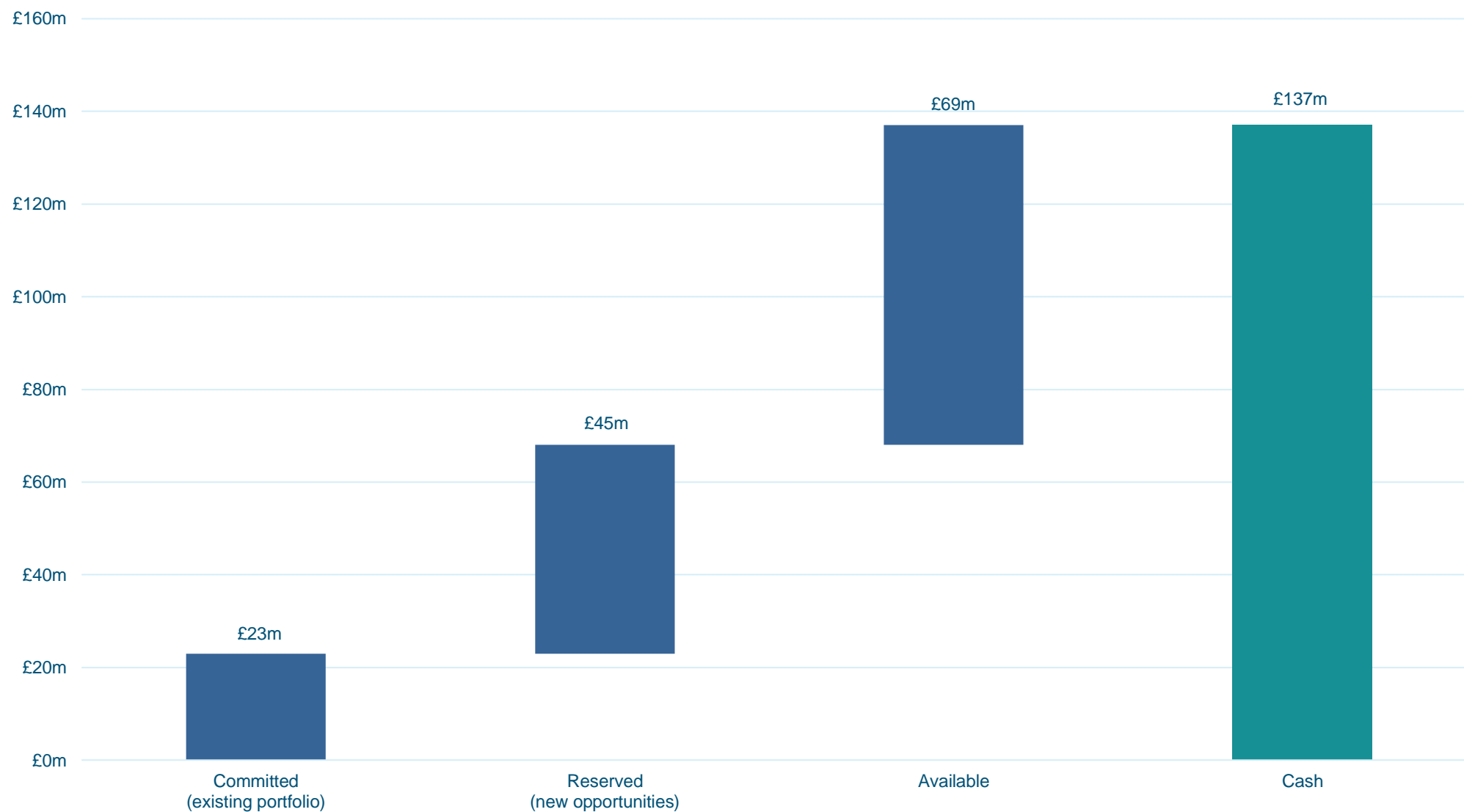
- Founded by John Berriman Founder and the first chairman of Solexa Ltd (now owned by Illumina Inc) the company which developed the DNA sequencing technology
- Developing SIMDEQ, a novel technology for complete analysis of DNA & RNA (nucleic acids)
- SIMDEQ has the power to significantly expand our understanding of genetics and open up new horizons in biomedicine
- Arix is the sole institutional investor

Cash invested: £1.3m

Current NAV: £1.4m



# Well positioned to exploit deep pipeline of new opportunities



# Group Strategy

# Strategy

Diversified investments and company creation in game changing life science technologies

VENTURE CAPITAL

COMPANY CREATION

VIPES

- **Broad strategic approach** to life science investing; we invest in seed stage companies, preclinical and clinical stage assets; private or public
- We partner with the most **ambitious entrepreneurs** to develop companies that aim to have a significant impact on patients lives
- We take an **active management approach**; adding value at board level through scientific and commercial expertise
- We **build stakes to accelerate growth** in our companies; reserving funds to back our winners and reduce risk
- Our **permanent capital** model allows us to take a **longer term view** than our non-listed peers; exiting when the optimum value is reached

# Extensive global network

Unique platform driving a deep pipeline of opportunities

Pharmaceutical  
companies

Deep VC  
networks

Research  
accelerators

Universities

Direct biotech  
networks

Fund  
Manager

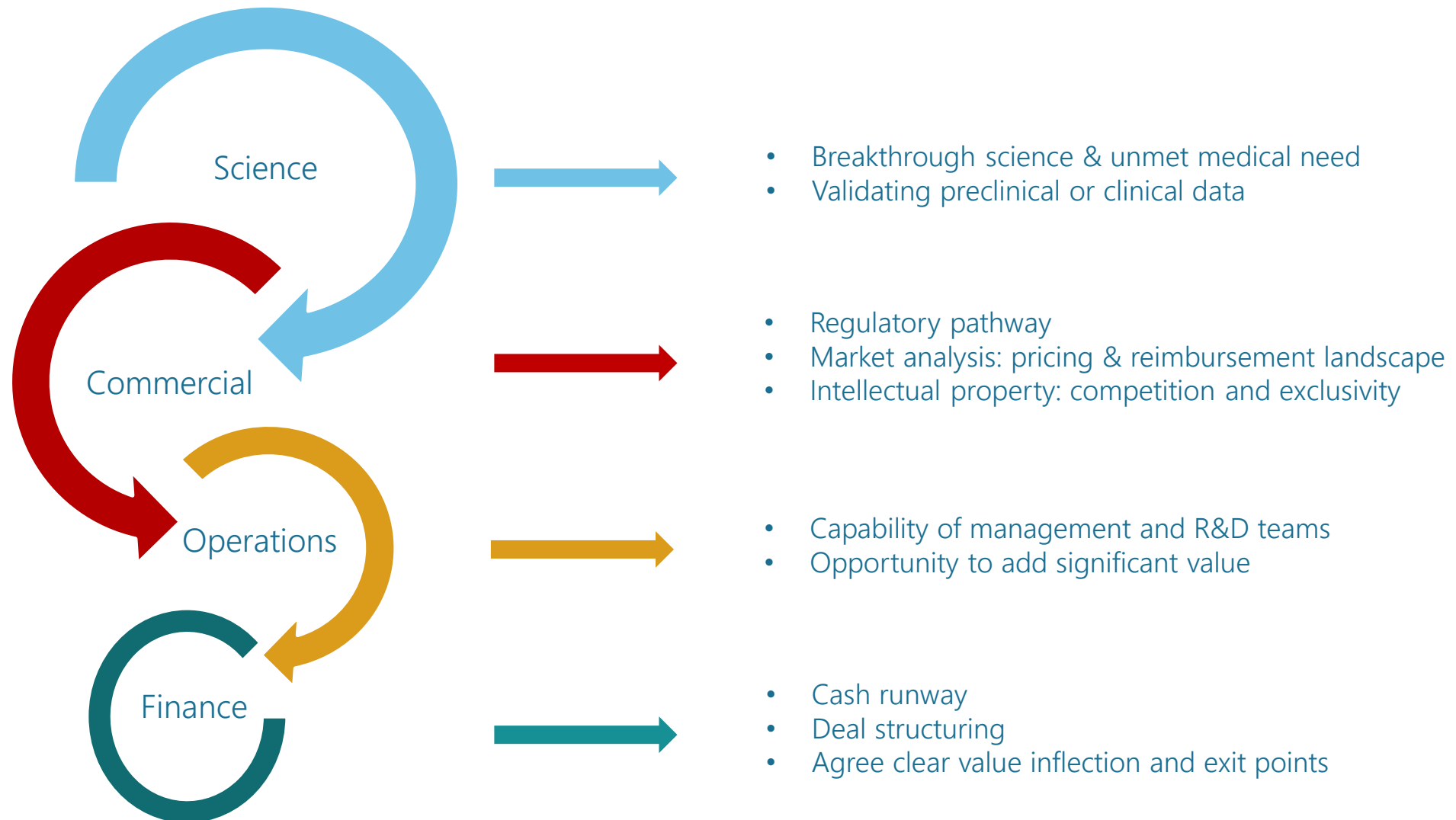
Rich, renewable pipeline of opportunities  
Transatlantic networks, with reach into Asia, Israel and Australia

# 1082

opportunities reviewed

# Deep due diligence process

Detailed approach to identifying and verifying scientific and commercial potential



# Company Outlook

# Outlook

Multiple catalysts for further growth over next 18 months

- Group Businesses on track to deliver **strong business and clinical development**
- **Multiple clinical milestones** expected over the next 18 months
- **New investments, company creation** and follow on capital in 2018
- **Accelerating growth** and building stakes in core portfolio as milestones are met
- **NAV growing substantially** and on track to deliver continued growth in 2H2018

Data expected from 10 clinical trials

12 new clinical trials due to commence

New investments and company creation

Follow on financing and business development in core portfolio

# Appendices



# Arix: a unique proposition



## Permanent capital base

Longer term view than no listed peers; ability to support Group Businesses through all stages of development



## Premium access to cutting-edge science

Access to high quality global networks and research accelerators, together with links to universities



## Pharma partners

Partnering to build and develop new innovative technologies, utilising extensive R&D capabilities



## Clear focus

Life science specialists with a focus on gene therapy, oncology and infectious diseases



## Expertise

Proven multi-disciplinary leadership team with a strong track record of building and realising value



## Unconstrained model

Unconstrained by institution, geography or stage of company development; ability to source the best life science innovation without restriction

# Case study: Autolus

A clinical-stage, biopharmaceutical company developing next-generation, programmed T cell therapies for the treatment of cancer.

## Completion of Nasdaq IPO

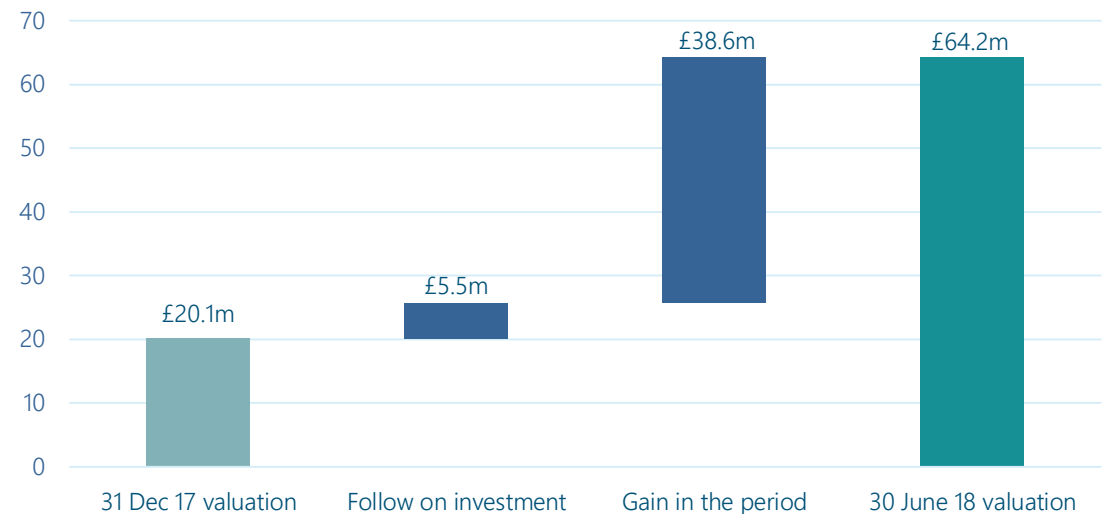
- Raised \$150m in an oversubscribed IPO
- Arix acquired additional shares, increasing equity stake to ~£64m; representing 3x return on £20.8m investment

## 6 clinical trials commenced in 5 programmes:

- AUTO2: dual-targeting CAR-T; APRIL in multiple myeloma, targeting independent antigens BCMA and TACI
- AUTO3: first CAR T cell therapy targeting CD19 and CD22 with independently acting CARs; AMELIA in pALL and ALEXANDER in adult DLBCL
- AUTO6: glycosphingolipid GD2-targeting programmed T cell product candidate in paediatric patients with neuroblastoma
- AUTO1: CD19 CAR; paediatric and adult ALL
- AUTO 4: TRBC1 CAR therapy AUTO5: TRBC2 CAR therapy. AUTO 4/5 offers a unique approach to T cell Lymphoma

## Next steps:










- Clinical data from AUTO2 and AUTO3
- AUTO6 NG Phase 1/2 trial initiation
















**Autolus**

# Group Businesses at 30 June 2018

Interests held on Arix's balance sheet

	31 December 2017 Value £m	Net Investment in Period £m	Change in Valuation (including FX) £m	30 June 2018 Value £m	Fully Diluted Equity Interest %	Funding Committed, Not Yet Invested £m	Fully Diluted Equity Interest when Commitment Drawn
<b>Autolus</b>	20.1	5.5	38.6	64.2	7.9%	-	7.9%
 <b>artios</b>	3.7	-	-	3.7	14.7%	1.4	14.9%
 <b>HARPOON</b> Therapeutics	5.1	-	0.1	5.2	8.0%	4.2	12.3%
<b>aura</b>	2.5	-	-	2.5	5.3%	1.2	6.6%
 <b>ITERUM</b> therapeutics	5.7	6.7	(4.1)	8.3	7.4%	-	7.4%
 <b>amplyx</b>	2.8	-	-	2.8	2.8%	1.8	3.8%
<b>AtoxBio</b>	3.0	-	0.1	3.1	3.7%	3.0	6.4%
<b>LogicBio</b> therapeutics	4.8	-	0.1	4.9	13.3%	2.7	15.4%
 <b>PRECITHERA</b>	0.5	-	-	0.5	17.8%	5.4	23.4%
 <b>OptiKira</b>	1.3	-	-	1.3	26.0%	-	26.0%
 <b>Mitoconix</b>	0.4	-	-	0.4	2.1%	2.7	9.0%
 <b>Verona Pharma</b>	2.9	-	0.8	3.7	2.5%	-	2.5%
 <b>Depixus</b>	1.1	0.3	-	1.4	18.6%	0.1	19.2%
<b>Group Businesses</b>	53.9	12.5	35.6	102.0	-	22.5	-
<b>Other Interests</b>	17.4	1.9	0.5	19.8	-	-	-
<b>Total</b>	71.3	14.4	36.1	121.8	-	22.5	-

# Value and ownership % of direct interests

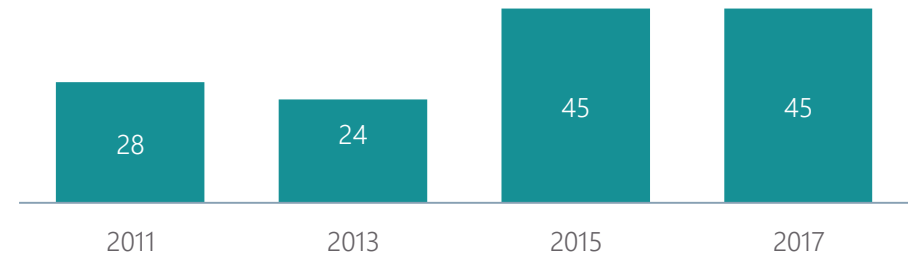
	Value of Arix interest*	Equity ownership**
	£64.2m	7.9%
	£5.1m	14.9%
	£9.4m	12.3%
	£3.7m	6.6%
	£8.3m	7.4%
	£4.6m	3.8%
	£6.1m	6.4%
	£7.6m	15.4%
	£5.9m	23.4%
	£3.1m	9.0%
	£1.3m	26.0%
	£3.7m	2.5%
	£1.5m	19.2%

\* Value of Arix interest for all companies as at 30 June 2018 based on the assumption of total invested and committed capital per latest funding round, plus any valuation movements as per International Private Equity and Venture Capital Valuation Guidelines \*\* % equity ownership figures indicate Arix's fully diluted equity stake in the corresponding Group Business once all committed capital has been invested.

# Macro trends support market opportunity

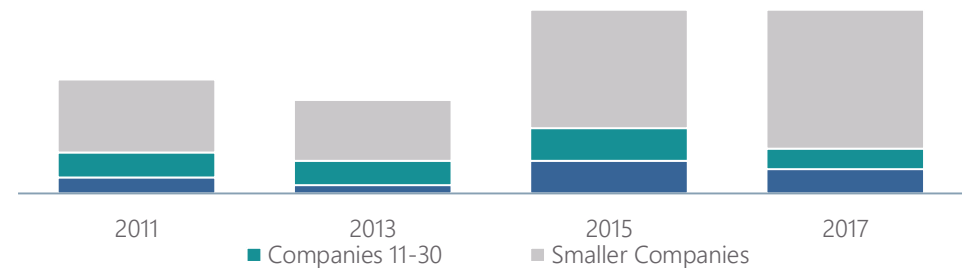
Scientific innovation driving increasing numbers of new therapies and technologies

New molecular entity approvals by the FDA<sup>1</sup>



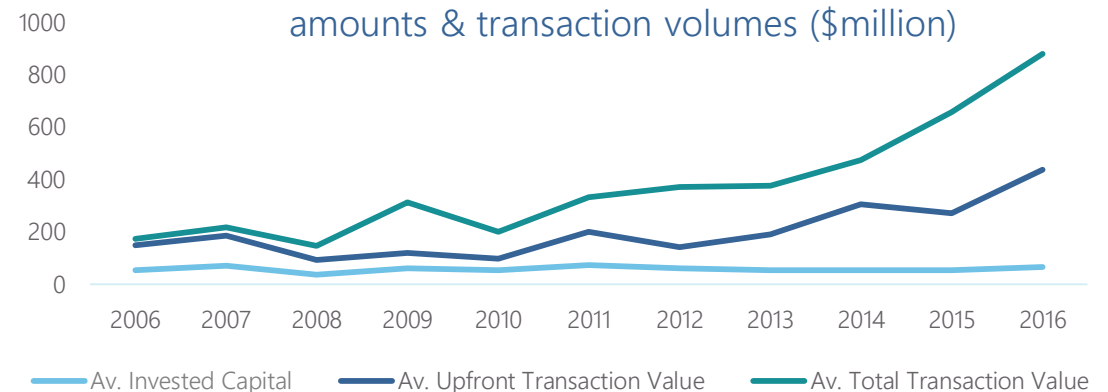
Innovation continues to be driven by smaller companies

Number of drug approvals by originator<sup>2</sup> company size



Premium prices paid for innovation

VC-backed biopharma companies sold – av. investment amounts & transaction volumes (\$million)

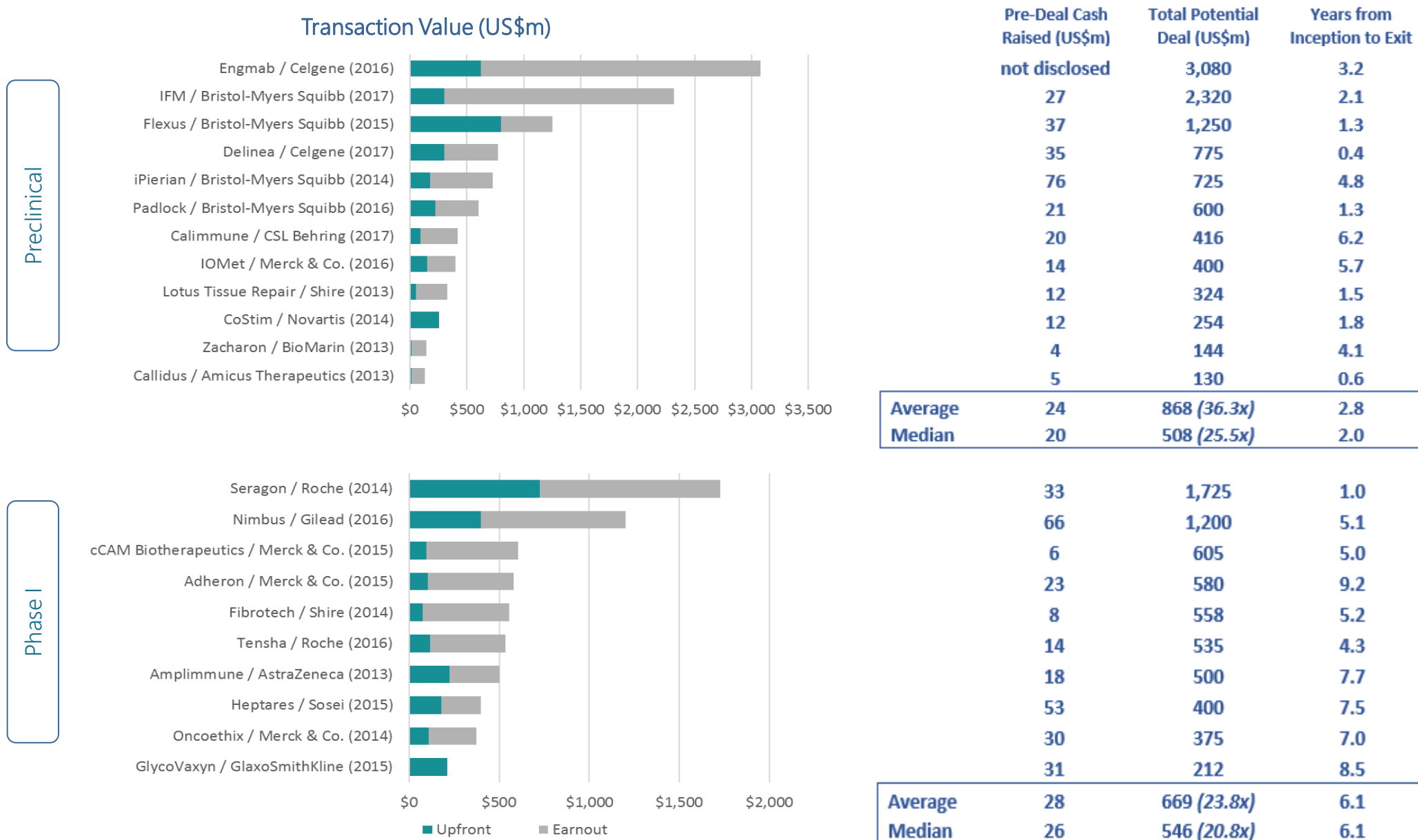


1. Source: Company, FDA, HBM analysis

2. Drug originator defined as the company that undertook the first significant development effort for a drug

# Market opportunity

## Premium price paid for innovation



Source: Press releases, Pitchbook.

Note: Companies acquired while lead asset is in Phase I or preclinical development, for a disclosed value of over US\$100m, 2010 to August 2017. This slide is not intended to indicate Arix's expected returns or strategy in any way but instead to provide historical market context for early stage biotech.

# Public Market Opportunities

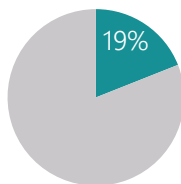
## VIPEs: Venture-style Investments in Public Companies

- There are many undervalued small public companies running out of cash
- Some outstanding technologies are hidden in “orphaned” companies
- Recapitalising and rebuilding such companies can lead to significant investment returns
- Potential for generating near-term returns

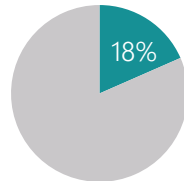
Total number of \$50m-\$500m market cap  
life sciences companies globally

>500

Companies  
trading more than 50%  
below 52W high



Companies  
with <1 year  
cash left



Previously identified VIPE opportunities

European clinical stage cell therapy company with multi-billion market potential

UK drug discovery company with widely-applicable technology platform

Implantable medical device company in early commercialization phase into huge market

Nanoparticle drug delivery company platform with oncology and anti-infective potential

...and others

# Proactive sector research

White papers drive rigorous understanding and identify specific opportunities

## Recent focus areas: anti-infectives, oncology and gene therapy



Objective: rigorous sector evaluation to develop a detailed understanding of a sector

Contents: memorialise findings that becomes a "living document"

- Market opportunity / unmet need
- Current competition / standard of care
- Clinical development approaches
- Regulatory environment
- Pipeline / new technologies
- Commercialisation (pricing, reimbursement)
- Strategic interest / valuations

Results: list of companies / technologies worth immediate diligence or longer-term monitoring; *e.g. Iterum, Harpoon, LogicBio*



# Research accelerators

Privileged access to opportunities in Europe and the US



- Newly formed partnership focused on advancing oncology and anti-infective discoveries from Fred Hutch labs into new companies
- Joint partnership with Evotec, which provides extended due diligence capability



MAX-PLANCK-GESELLSCHAFT

- “First look” agreement with the Max Planck Society LDC
- c.100 research institutions in Germany
- Employs > 22,000 people and receives funding of €1.8bn p.a.



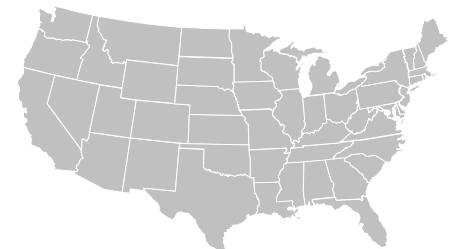
- \$300m initiative to advance discoveries by Harrington scholars
- Provides access into leading US research institutions and universities
- Arix has “first look” and “first option” rights over a number of early stage oncology opportunities

# US: sourcing innovation

## Broad VC networks and shareholding in a research accelerator

- 🌀 Extensive relationships in the industry and VC community in the US
- 🌀 Dealflow and US Group Companies supported by a team in NYC
- 🌀 Innovative science also sourced through BioMotiv with links to the Harrington Scholars program
- 🌀 Arix is a BioMotiv shareholder and has committed \$25m
- 🌀 Arix can invest in businesses via BioMotiv, alongside BioMotiv, or independently of BioMotiv
- 🌀 Opportunities pre-qualified at point of review by BioMotiv following Harrington screening process

**BioMotiv**



# Extensive reach into US academic centres

## Harrington Scholars programme

Key

HDI Projects

BioMotiv Investments

